

WHAT IS CLAIMED IS:

1. A method of assaying cellular activity by monitoring a change in a cellular system, comprising:
 - coupling an electromagnetic test signal in a frequency range from 10 MHz to 1000 GHz to a sample in which a cellular event is being detected, whereby said sample interacts with and modulates said test signal to produce a modulated test signal;
 - detecting said modulated test signal; and
 - analyzing said modulated test signal to detect said cellular event.
2. The method of claim 1, wherein said cellular activity comprises a change in amount of a substance present in said cell as the result of presence of a test substance in a medium containing said cell.
3. The method of claim 1, wherein said substance is a protein, a lipid, a carbohydrate, a nucleic acid, water, or an ion.
4. The method of claim 1, wherein said cell comprises artificially inserted genetic material encoding a target receptor.
5. The method of claim 1, wherein said cell is a wild-type cell.
6. The method of claim 2, wherein said cell comprises a receptor having a known activity and said change results from activity of said test substance as an agonist or antagonist of said receptor activity.
7. The method of claim 1, wherein said change is opening or closing of an ion channel.
8. The method of claim 1, wherein said cell is a mammalian cell.

13. The method of claim 11, wherein said substance is a protein, a lipid, a carbohydrate, a nucleic acid, water, or an ion.
14. The method of claim 11, wherein said cell comprises artificially inserted genetic material encoding a target receptor.
15. The method of claim 11, wherein said cell is a wild-type cell.
16. The method of claim 12, wherein said cell comprises a receptor having a known activity and said change results from activity of said test substance as an agonist or antagonist of said receptor activity.
17. The method of claim 11, wherein said change is opening or closing of an ion channel.
18. The method of claim 11, wherein said cell is a mammalian cell.
19. The method of claim 18, wherein said cell is a CHO cell.
20. The method of claim 11, further comprising verifying said method by correlating with a known cell activity of a known substance prior to testing an unknown substance.